

IN THE CLAIMS:

Please amend the claims as set forth below. This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-55. (Canceled).

Claim 56 (Currently Amended): A substrate dividing method comprising the steps of:
irradiating a laser light incident face of a substrate with laser light while positioning a light-converging point within the substrate, so as to form a modified region only within the substrate, the substrate having a front face and a rear face through the substrate, the front face of the substrate being formed with a functional device, and the modified region forming a starting point region for cutting the substrate inside the substrate at a predetermined distance from the laser light incident face of the substrate;

grinding the rear face of the substrate after the step of forming the starting point region such that, after the grinding, the substrate comprises at least a portion of the modified region; and

dividing the substrate, wherein the substrate is divided when a fracture generated in a thickness direction of the substrate from the starting point region for cutting reaches the laser light incident face and [[a]] the rear face of the substrate.

Claim 57 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is a semiconductor substrate.

Claim 58 (Previously Presented): A substrate dividing method according to claim 57, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 59 (Previously Presented): A substrate dividing method according to claim 56, wherein the modified region is a molten processed region.

Claim 60 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is an insulating substrate.

Claim 61 (Currently Amended): A substrate dividing method according to claim 56, wherein the ~~front~~ laser light incident face of the substrate is formed with a functional device; ~~and wherein the rear face of the substrate is ground in the step of grinding the substrate.~~

Claim 62 (Previously Presented): A substrate dividing method according to claim 56, wherein the step of grinding the substrate includes a step of subjecting the rear face of the substrate to chemical etching.

Claim 63 (Previously Presented): A substrate dividing method according to claim 56, wherein the modified region includes a crack region.

Claim 64 (Previously Presented): A substrate dividing method according to claim 63, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 65 (Previously Presented): A substrate dividing method according to claim 56, wherein the modified region includes a refractive index change region which is a region with a changed refractive index.

Claim 66 (Previously Presented): A substrate dividing method according to claim 65, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 ns or less.

Claim 67 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is made of a piezoelectric material.

Claim 68 (Previously Presented): A-substrate dividing method according to claim 67, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 69 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is divided into a plurality of chips along lines along which the substrate is divided and the lines being arranged in a lattice for the substrate.

Claim 70 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate after the step of grinding the substrate.

Claim 71 (Previously Presented): A substrate dividing method according to claim 56, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate in the step of grinding the substrate.

Claim 72 (Currently Amended): A substrate dividing method comprising the steps of:
irradiating a laser light incident face of a substrate with laser light while positioning a light-converging point within the substrate, so as to form a modified region only within the substrate, the substrate having a front face and a rear face through the substrate, the front face of the substrate being formed with a functional device, and the modified region forming a starting point region for cutting the substrate inside the substrate at a predetermined distance from the laser light incident face of the substrate;

grinding the rear face of the substrate after the step of forming the starting point region to remove the modified region from the substrate such that, after the grinding, the substrate comprises at least a portion of a fracture generated in a thickness direction of the substrate from the starting point region for cutting; and

dividing the substrate, wherein the substrate is divided when the fracture reaches the laser light incident face and a the rear face of the substrate.

Claim 73 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is a semiconductor substrate.

Claim 74 (Previously Presented): A substrate dividing method according to claim 73, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 75 (Previously Presented): A substrate dividing method according to claim 72, wherein the modified region is a molten processed region.

Claim 76 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is an insulating substrate.

Claim 77 (Currently Amended): A substrate dividing method according to claim 72, wherein the ~~front~~ laser light incident face of the substrate is formed with a functional device; ~~and wherein the rear face of the substrate is ground in the step of grinding the substrate.~~

Claim 78 (Previously Presented): A substrate dividing method according to claim 72, wherein the step of grinding the substrate includes a step of subjecting the rear face of the substrate to chemical etching.

Claim 79 (Previously Presented): A substrate dividing method according to claim 72, wherein the modified region includes a crack region.

Claim 80 (Previously Presented): A substrate dividing method according to claim 79, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 81 (Previously Presented): A substrate dividing method according to claim 72, wherein the modified region includes a refractive index change region which is a region with a changed refractive index.

Claim 82 (Previously Presented): A substrate dividing method according to claim 81, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 ns or less.

Claim 83 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is made of a piezoelectric material.

Claim 84 (Previously Presented): A substrate dividing method according to claim 83, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 85 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is divided into a plurality of chips along lines along which the substrate is divided and the lines being arranged in a lattice for the substrate.

Claim 86 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate after the step of grinding the substrate.

Claim 87 (Previously Presented): A substrate dividing method according to claim 72, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate in the step of grinding the substrate.

Claim 88 (Currently Amended): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising the steps of:
irradiating a laser light incident face of a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region only within the substrate, the substrate having a front face and a rear face through the substrate, the front face of the substrate being formed with a functional device, the modified region forming a starting point region for cutting the substrate, the modified region being located inside the substrate at a predetermined distance from the laser light incident face of the substrate; and

grinding the rear face of the substrate after the step of forming the starting point region such that, after the grinding, the substrate comprises at least a portion of the modified region; and dividing the substrate, wherein the substrate is divided when a fracture generated in a thickness direction of the substrate from the starting point region for cutting reaches the laser light incident face and a the rear face of the substrate in order to provide at least one manufactured semiconductor device.

Claim 89 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 90 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the modified region is a molten processed region.

Claim 91 (Currently Amended): A method of manufacturing a semiconductor device according to claim 88, wherein the ~~front~~ laser incident face of the substrate is formed with a functional device; and

~~wherein the rear face of the substrate is ground in the step of grinding the substrate.~~

Claim 92 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the step of grinding the substrate includes a step of subjecting the rear face of the substrate to chemical etching.

Claim 93 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the modified region includes a crack region.

Claim 94 (Previously Presented): A method of manufacturing a semiconductor device according to claim 93, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 95 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the modified region includes a refractive index change region which is a region with a changed refractive index.

Claim 96 (Previously Presented): A method of manufacturing a semiconductor device according to claim 95, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 ns or less.

Claim 97 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the substrate is divided into a plurality of chips along lines along which the substrate is divided and the lines being arranged in a lattice for the substrate.

Claim 98 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate after the step of grinding the substrate.

Claim 99 (Previously Presented): A method of manufacturing a semiconductor device according to claim 88, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate in the step of grinding the substrate.

Claim 100 (Currently Amended): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising the steps of:

irradiating a laser light incident face of a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region only within the substrate, the substrate having a front face and a rear face through the substrate, the front face of the substrate being formed with a functional device, the modified region forming a starting point region for cutting the substrate, the modified region being located inside the substrate at a predetermined distance from the laser light incident face of the substrate; and

grinding the rear face of the substrate after the step of forming the starting point region to remove the modified region from the substrate such that, after the grinding, the substrate comprises at least a portion of a fracture generated in a thickness direction of the substrate from the starting point region for cutting;

dividing the substrate, wherein the substrate is divided when the fracture reaches the laser light incident face and a the rear face of the substrate in order to provide at least one manufactured semiconductor device.

Claim 101 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 102 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the modified region is a molten processed region.

Claim 103 (Currently Amended): A method of manufacturing a semiconductor device according to claim 100, wherein the front laser light incident face of the substrate is formed with a functional device; ~~and~~

~~wherein the rear face of the substrate is ground in the step of grinding the substrate.~~

Claim 104 (Previously Presented): A method of manufacturing, a semiconductor device according to claim 100, wherein the step of grinding the substrate includes a step of subjecting the rear face of the substrate to chemical etching.

Claim 105 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the modified region includes a crack region.

Claim 106 (Previously Presented): A method of manufacturing a semiconductor device according to claim 105, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 μ s or less.

Claim 107 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the modified region includes a refractive index change region which is a region with a changed refractive index.

Claim 108 (Previously Presented): A method of manufacturing a semiconductor device according to claim 107, wherein the substrate is irradiated with the laser light under a condition with a peak power density of at least 1×10^8 (W/cm²) at the light-converging point and a pulse width of 1 ns or less.

Claim 109 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the substrate is divided into a plurality of chips along lines along which the substrate is divided and the lines being arranged in a lattice for the substrate.

Claim 110 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate after the step of grinding the substrate.

Claim 111 (Previously Presented): A method of manufacturing a semiconductor device according to claim 100, wherein the substrate is divided when the fracture reaches the front face and the rear face of the substrate in the step of grinding the substrate.